

APPENDIX A
Brevard County Hazards Analysis

Appendix A contains the Brevard County Hazards Analysis for the Astrotech facility. Astrotech's Safety Officer has worked closely with local emergency planners and emergency response officials in performing this hazards analysis (as defined in EPA's Technical Guidance for Hazards Analysis). The vulnerable zones predicted using the EPA model, are based on assumptions that are admitted by EPA are extremely conservative and therefore lead to unrealistically large zones; the function of the identified vulnerable zone is for screening purposes. This assists local emergency planners in identifying the potential hazards at industrial facilities and in setting preparedness and planning priorities for those facilities within their planning area.

Brevard County, using a computer program developed for the State of Florida by its emergency planning agency, has projected vulnerable zones around Astrotech based on a sudden release of six barrels or 3,000 pounds of either anhydrous hydrazine or monomethyl hydrazine, even though the maximum amount of either chemical allowed by the permit at the facility at any time is 2,500 pounds. The Technical Guidance recommends assuming that a spill occurs outside of the containment building. However, because the maximum quantity of fuel that is at any time transported to Astrotech is two drums (approximately 925 pounds of anhydrous hydrazine or 800 pounds of monomethyl hydrazine) a release of the maximum permitted quantity is a large overestimation of any possible release.

The widest zone of exposure to a concentration of vapor that is 10% of the IDLH, based on the EPA model, would come from a sudden release of the estimated amount of monomethyl hydrazine into a 3.4 miles per hour wind. Under these conservation wind conditions, the vulnerable zone would extend approximately one-half mile from the facility. A map of this vulnerable zone, which would include parts of Highways 405 and 407, a residential neighborhood of approximately twelve families across Highway 407 from the facility and an area of the industrial park past Grissom Parkway, is shown in the attached report.

Although Brevard County emergency management officials believe that an accidental release of the magnitudes on which the vulnerable zones were estimated would be highly unlikely, their site emergency plan for Astrotech and the evacuation plan for the area surrounding the facility are based on this "worst case scenario" that assumes the total quantity of propellant allowed on-site is released outside of the facility. County emergency officials view a more realistic, but still unlikely, incident as one in which a release would be initiated within the building and exposure would be confined to the facility and the immediate vicinity of the facility.

Hazards Analysis

Facility ID: 00-00000-01

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Facility Name: Astrotech Space Operations, LP Last Date of Update: 04/03/90
Address: 1515 Chaffee Dr. (Grissom
Industrial Pk) Titusville Zip: 32780-
Coordinator: Bruce Campbell
Position: Safety Engineer Phone: (407)268-3830
Business Type: Satellite fueling
Parent Company: Westinghouse Electric Corp.
Address: P.O Box 746
Baltimore, MD Zip: 21203-

Location(Rural/Urban): urban

Transportation Routes:
Interstate Highway I-95
State Road 407
State Road 405
US Highway 1

Evacuation Routes
WIND FROM (Take route indicated until VZ is exited)
NE to SE SR 407

SE to SW SR 405

SW to NW SR 405

NW to NE SR 407

CAS Numbers for all Extremely Hazardous Substances on site:
00302-01-2, 00060-34-4,

INFORMATION
(For Field Use Only)

Facility ID: 00-00000-01
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Facility Name: Astro Technologies Inc

Physical Location: Inside satellite processing facility

Alarm System?(Y/N): Y

Back Up?(Y/N): Y

To Whom: Safety Systems

Materials Properly Separated: Y

(P)ump or (G)ravity feed system: G

Frequency of Inspection or Test: Daily

Safety Equipment: SCBA, Level A suits, diking, Oxygen cannisters, showers

Mutual Aid Agreements: Kennedy Space Center, McDonnell Douglas

Site Emergency Plan?(Y/N): Y

Hours of Operation: As necessary

NOCT. of Trained Personnel: 100

Training Program?(Y/N): Y

Security: Guards

Waste Disposal System?(Y/N): Y

1st Resp. Pub. Safety Agency: Titusville Fire Department

Historical Accident Record: Three drops of hydrazine spilled on disconnect of fueling line in

Probability of any release: Less than 1%

Comments:

Astrotech is a highly technical, sophisticated fueling facility of satellites (commercial and government) being launched from Kennedy Space Center or Cape Canaveral Air Force Station complexes.
Critical Facilities: None within vulnerable zone.

Chemical Name
Hydrazine

HAZARDS IDENTIFICATION

CAS NO. 302-01-2	F. DOT ID. NO. 2029	Max Quantity On Site 3000(lbs)	Weight Largest Vessel or Interconnected Vessels 3000(lbs)
Physical State			
Liquid	Gas	Solid	
		Powder	Solution
			Molten
100 %	0 %	0 %	0 %
Temperature Stored AMBIENT	Temperature Handled AMBIENT	Frequency of Shipments 6 year	Form Of Shipments 55 gal dr
Quantity of Shipment 6	Mode of Transportation flat bed	Fire Data Combustible, hypergolic	
Area of Dike: 500(sqft)	Explosive Data Highly explosive. May be ignited by high heat, spark or flame.		
Storage Above Ground?(Y/N):Y	Reactive Data Highly reactive with nitrogen/nitrate based chemicals.		
Location(Urban/Rural): urban			

RISK ANALYSIS

CAS #: 302-01-2
CHEMICAL NAME
Hydrazine

Probability of Release:
Probability of a release of Hydrazine from this facility is very slight. This facility employs state of the art containment, scrubber, and neutralization technology. This facility has an excellent training and safety program as well as a comprehensive emergency response program.

Consequence if people are exposed:
Dizziness, nausea, corrosive to eyes/skin/mucous membranes. May cause temporary blindness, damage to major organs and fetal malformations. Suspect human carcinogen.

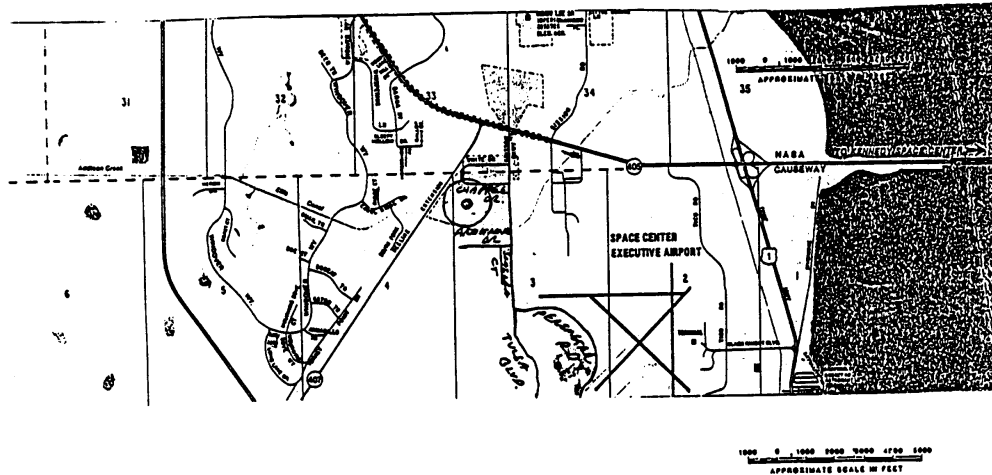
Consequences for Property:
Property damage limited to site.

Consequence of Environmental Exposure:
Uncontrolled spill could cause pollution.

Historical Accident Record:
Three drops of product were spilled in 1986 due to a faulty disconnect procedure.

GENERAL INFORMATION

General Information to assist first responders :
Evacuate away from product. Flood with water to fight fire, to prevent reignition.
Isolate area of spill by diking. Stop source of leak. Dilute to 5% or less. Add
5% concentration of a hypochlorite solution.



EHS: Hydrazine

CAS # : 302-01-2
 Facility Name: Astro Technologies Inc
 Address: 1515 Chaffee Dr. (Grissom
 Industrial Pk) Titusville
 32796-

Coordinator: Bruce Campbell

Phone: (407)268-3830

Location : urban

Vulnerable Zone(3.4 mph Windspeed)

Radius: 0.1 (mi.)

VZ Area: 0.0 (sq.mi.)

Vulnerable Zone(11.9 mph Windspeed)

Radius: 0.0 (mi.)

VZ Area: SITE ONLY(0.0 sq.mi.)

Critical Nearby Facilities: There are no critical facilities within the vulnerable zone.

Hazards Identification

Facility ID: 00-00000-01

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Chemical Name
Methyl Hydrazine

CAS NO.	F. DOT ID. NO.	Max Quantity On Site	Weight Largest Vessel or Interconnected Vessels
60-34-4	1244	3000(lbs)	3000(lbs)
Physical State			
Liquid	Gas	Solid	
		Powder	Solution Molten
100 %	0 %	0 %	0 %

Temperature
Stored
AMBIENT

Temperature
Handled
AMBIENT

Frequency of
Shipments
6 year

Form Of
Shipments
55 gal drm

Quantity of
Shipment
6

Mode of
Transportation
flat bed

Fire Data
Combustible, hypergolic

ree of Dike: 500(sqft)

Explosive Data
Highly explosive. May be ignited by heat
, spark, or flames.

Storage Above Ground?(Y/N):Y

Reactive Data

Location(Urban/Rural): urban

Highly reactive with Nitrogen based chem
icals & oxidizing agents.

RISK ANALYSIS

CAS #: 60-34-4
CHEMICAL NAME
Methyl Hydrazine

Probability of Release:

Possibility of release of Monomethyl Hydrazine from this facility is very slight. This facility employs state of the art containment, scrubber, and neutralization technology. The facility has an excellent training and safety program as well as a comprehensive emergency response program.

Consequence if people are exposed:

Dizziness, nausea, corrosive to eyes/skin/mucous membranes, may cause temp. blindness, damage to major organs and fetal malformations. Suspect human carcinogen

Consequences for Property:

By itself, property damage as a consequence of a release of Monomethyl Hydrazine should be limited to the site only. However, when combined with Nitrogen Tetroxide, the possibility exists that a violent reaction could result which may possibly effect off-site locations in the area of the vulnerable zone, in the form of a explosion and fire hazard.

Consequence of Environmental Exposure:

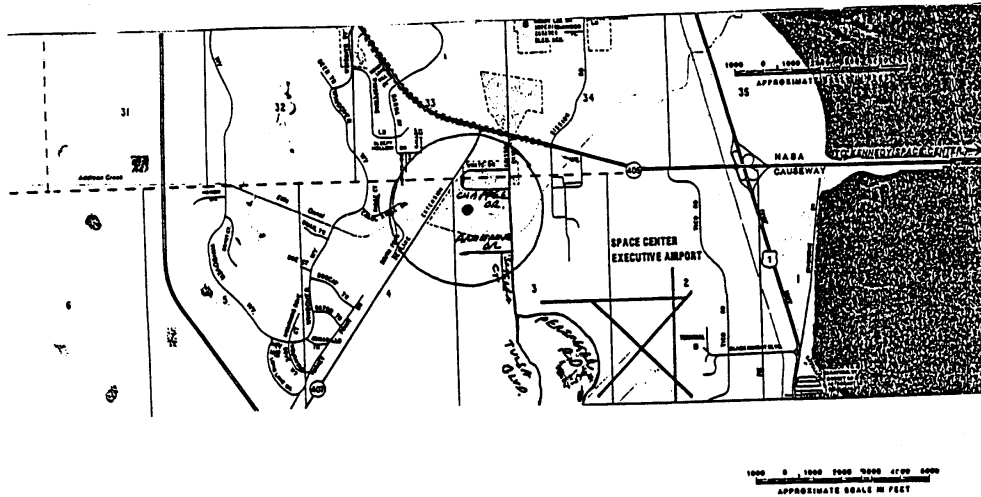
Uncontrolled spill could cause pollution.

Historical Accident Record:

As far as an overall facility record, three drops of Anhydrous Hydrazine were spilled in 1986 on disconnect of a fueling line. There has been no spill of Monomethyl Hydrazine from this facility as of this date.

GENERAL INFORMATION

General Information to assist first responders:
Evacuate away from product. Flood with water to fight fire, to prevent reignition and to keep exposed containers cool. Remove all sources of ignition. Isolate area of spill by diking. Stop source of leak. Dilute to 5% or less. Add 5% solution of a hypochlorite solution.



EHS: Methyl Hydrazine

CAS # : 60-34-4
 Facility Name: Astro Technologies Inc
 Address: 1515 Chaffee Dr. (Grissom
 Industrial Pk) Titusville
 32796-
 Coordinator: Bruce Campbell Phone: (407)268-3830
 Location : urban
 Vulnerable Zone(3.4 mph Windspeed) Vulnerable Zone(11.9 mph Windspeed)
 Radius: 0.5 (mi.) Radius: 0.2 (mi.)
 VZ Area: 0.8 (sq.mi.) VZ Area: 0.1 (sq.mi.)

Critical Nearby Facilities: There are no critical facilities within the vulnerability zone.